Unsuspected 34-week pregnancy presenting as acute hypoxaemic respiratory failure

Andrew M Luks

An obese body habitus may interfere with diagnosis of potentially life-threatening conditions. This report describes an obese woman who presented with acute hypoxemic respiratory failure and diffuse infiltrates. Her body habitus disguised her parturient abdomen and she could not provide a history because she was intubated and paralysed. Only after a urine pregnancy test was undertaken did it become apparent that she was pregnant and the diagnosis of pre-eclampsia with pulmonary oedema was considered. Urine pregnancy tests are part of the standard work-up for abdominal pain in women of childbearing age, but are not viewed as part of the work-up for respiratory distress or diffuse radiographic infiltrates. This case illustrates the value of obtaining a pregnancy test in all women, particularly those with obese body habitus, who present with respiratory failure of unclear aetiology.

A 43-year-old obese woman, who has provided verbal consent for publication of this case report, awoke from sleep with severe dyspnoea. After being found by the medics in respiratory distress with an oxygen saturation of 50%, she was intubated and transported to the emergency room. She had been well until 1 week earlier when she developed headache, myalgias and cough, followed 3 days later by dyspnoea on exertion and lower extremity oedema. She had no other medical problems and was not taking any medications. She was gravida 4, para 1 with three episodes of unexplained fetal demise in the second or third trimester of pregnancy. The date of her last menstrual period was unknown.

In the emergency room, her vital signs included: blood pressure 214/137 mm Hg; heart rate 170 beats/min; and an oxygen saturation of 70% on a fractional inspired oxygen (F_iO_2) of 1.0. Her body mass index (BMI) was 38 kg/m^2. She was intubated, sedated and paralysed and could not answer questions. The physical examination demonstrated diffuse lung crackles, a tachycardic rhythm without murmur, and 2+ bilateral, lower extremity oedema. Her abdomen was obese with no obvious masses.

Laboratory studies revealed a white blood cell count of 15×10^3/μl, a haematocrit of 50%, and a platelet count of 3.9×10^3/μl. The serum chemistry panel revealed bicarbonate 17 mmol/l, blood urea nitrogen (BUN) 26 mmol/L, creatinine 1.5 mg/d, aspartate transaminase (AST) 58 U/l, and alanine transaminase (ALT) (49 U/l). The concentration of B-type natriuretic peptide was 2740 pg/ml (normal <200 pg/ml). Cardiac enzymes were normal. Arterial blood gas on an F_iO_2 of 1.0 revealed a partial pressure of oxygen (PO_2) of 8.5 kPa. Urinalysis showed 3^+ protein and 3^+ blood. The electrocardiogram showed a sinus tachycardia with no ischaemic changes. The portable chest *x* ray (fig 1) demonstrated diffuse bilateral infiltrates.

At a loss to explain the cause of her respiratory failure, the physician ordered a urine β-HCG (human chorionic gonadotrophin), which subsequently came back positive. Obstetrics consultation was obtained and intravenous magnesium sulfate was administered. Obstetrical ultrasound revealed the presence of a viable 34 week fetus. When fetal heart rate monitoring revealed non-reassuring heart tones, the patient was taken for emergent caesarean section, which she tolerated well. The fetus was intubated for respiratory distress and transported to the neonatal intensive care unit.

Following delivery, the patient began a brisk auto-diuresis with subsequent improvement in her respiratory status. After being extubated on hospital day 2, she stated that she had known she was pregnant but had not told her family or her physician because she wanted to avoid the same difficult family dynamics that occurred with her previous failed pregnancies.

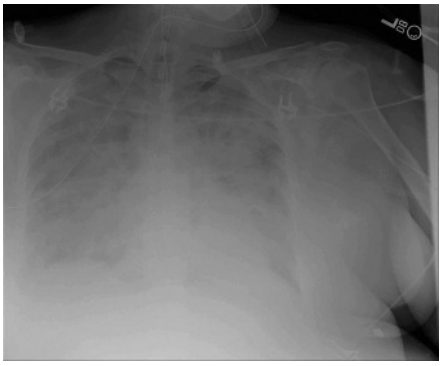

Figure 1 Admission portable chest radiograph demonstrating diffuse bilateral infiltrates.

DISCUSSION

Pre-eclampsia is a common pregnancy complication whose risk factors include nulliparity, multiple gestation, diabetes, chronic hypertension, renal disease and antiphospholipid antibody syndrome.[1] It is defined by the presence of hypertension (systolic blood pressure ⩾140 mm Hg or diastolic pressure ⩾90 mm Hg) and proteinuria (>300 mg/24 h).[2] Patients can also develop peripheral oedema, thrombocytopenia, transaminitis, hepatic rupture and neurologic findings such as headache or scotomata, while in severe cases seizures and the HELLP (haemolysis, elevated liver enzymes, low platelets) syndrome may occur. Pulmonary oedema is an uncommon complication of pre-eclampsia, occurring in roughly 3% of cases.[3]

Management of pre-eclampsia involves blood pressure control with hydralazine or labetalol,[2] but rapid decreases in blood pressure should be avoided in order to maintain uteroplacental blood flow.[4] Unless patients have pulmonary oedema, diuretics are not used because most patients have intravascular volume depletion.[4] Magnesium sulfate is administered as prophylaxis versus seizure activity and dexamethasone is administered if preterm delivery is anticipated.[5] In severe or refractory cases or if there is evidence of fetal distress, definitive treatment is prompt delivery of the fetus.

Other diagnostic considerations in pregnant women with respiratory distress include venous thrombo- or air embolism, aspiration pneumonitis, acute respiratory distress syndrome (ARDS), amniotic fluid embolism, tocolytic-induced pulmonary oedema, and peripartum cardiomyopathy. Pre-eclampsia is unique among this list of disorders in that it is the one disorder associated with the presence of hypertension.

The diagnosis of pre-eclampsia with or without pulmonary oedema is straightforward if the patient is known to be pregnant or if the physical examination provides clues, such as a parturient abdomen, to the possibility of pregnancy. If such information is lacking, the diagnosis may not be apparent. The patient described above

was intubated and paralysed and unable to answer questions. Her husband did not know her pregnancy status or her menstrual history. Finally, her obese body habitus hid her parturient abdomen. It was only when a urine pregnancy test was undertaken that it became known that she was pregnant and a diagnosis of pre-eclampsia with pulmonary oedema was considered.

Urine pregnancy tests are part of the standard work-up for any woman of childbearing age presenting with abdominal pain. They are not typically seen as part of the work-up for respiratory distress or diffuse bilateral infiltrates. The case described above clearly demonstrates the value of obtaining a urine pregnancy test in obese women who present with unexplained respiratory failure during their childbearing years.

Emerg Med J 2007;**24**:861–862.
doi: 10.1136/emj.2007.048967

Correspondence to: Andrew M Luks, MD, Pulmonary and Critical Care Medicine, University of Washington, 1959 NE Pacific Street, Box 356522, Seattle, WA 98195-6522, USA; aluks@u.washington.edu

Accepted 6 April 2007

Competing interests: The author has no personal of financial support or involvement with organisations with financial interest in the subject matter and has no conflicts of interest.

Consent: The patient has provided verbal consent for this report.

REFERENCES

1 **Duckitt K**, Harrington D. Risk factors for pre-eclampsia at antenatal booking: systematic review of controlled studies. *BMJ* 2005;**330**:565–71.
2 **Vidaeff AC**, Carroll MA, Ramin SM. Acute hypertensive emergencies in pregnancy. *Crit Care Med* 2005;**33**:S307–12.
3 **Sibai BM**, Mabie BC, Harvey CJ, *et al*. Pulmonary edema in severe preeclampsia-eclampsia: analysis of thirty-seven consecutive cases. *Am J Obstet Gynecol* 1987;**156**:1174–9.
4 **Lapinsky SE**, Kruczynski K, Slutsky AS. Critical care in the pregnant patient. *Am J Respir Crit Care Med* 1995;**152**:427–55.
5 **Practice CoO**. ACOG committee opinion: antenatal corticosteroid therapy for fetal maturation. *Obstet Gynecol* 2002;**99**:871–3.

Vacuum phenomenon in a dislocated joint

R Ahmad, S Annamalai, M Radford, C Cook

A vacuum phenomenon is a radiolucent collection of gas that is present at the sites of negative pressure. When traction is applied to a joint or when a joint dislocates, blood gases composed primarily of nitrogen leak out of the solution due to a reduced intra-articular pressure.[1]

A man in his 20s fell off scaffolding, landed on his everted foot and came to the emergency department with a deformed ankle. Computed tomographic (CT) scans revealed subtalar and calcaneocuboid fracture dislocation with presence of gas, although there was no break in the skin. We believe this gas was due to a vacuum phenomenon (fig 1).

Because of the low attenuation values of gas, the vacuum phenomenon is readily identifiable on CT scans. In the absence of penetrating trauma, the intra-articular gas seen on CT is a reliable indicator of recent dislocation and sometimes may be the only objective finding of the injury. The emergency medicine staff should be aware of this finding.

Emerg Med J 2007;**24**:862.
doi: 10.1136/emj.2006.043992

Authors' affiliations
R Ahmad, S Annamalai, M Radford, Department of Orthopaedics, Weston General Hospital, Weston-Super-Mare, UK
C Cook, Department of Radiology, Weston General Hospital, Weston-Super-Mare, UK

Correspondence to: Mr R Ahmad, 18 Oakwood, Coxhoe, Durham, DH6 4SQ, UK; riazhzi@yahoo.co.uk

Accepted 11 November 2006

Competing interests: none declared.

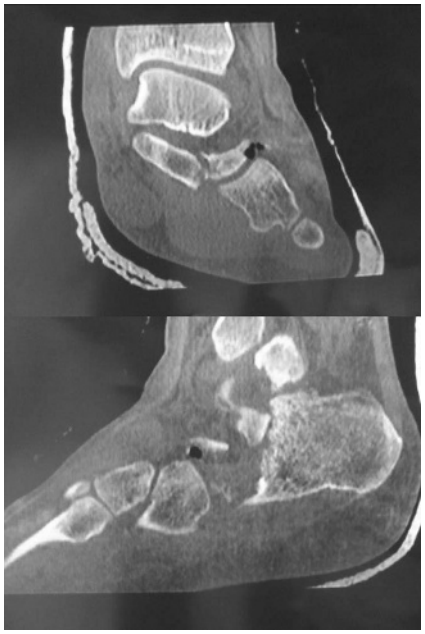

Figure 1 Computed tomographic scan showing presence of vacuum phenomenon.

REFERENCE

1 **Fuiks DM**, Grayson CE. Vacuum pneumarthrography and the spontaneous occurrence of gas in the joint spaces. *J Bone Joint Surg Am* 1950;**32-A**:933–8.